

THE NAVAJO YUCCA, A NEW SPECIES FROM
NEW MEXICO

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In May, 1944, while on a yucca survey, the writer and his father, Herbert John Webber, found what they believe to be a new species of *Yucca*. Since this attractive little yucca was found on the Navajo Indian Reservation, near Tohatchi, New Mexico, it is a pleasure to name it in honor of the Navajo Indians.

Yucca navajoa sp. nov. Caulescens caudice erecto demum 1.2 m. alto simplici vel breviramoso ad rosulam vel paulum infra; foliis rigide patentibus pungentibus linearibus vel oblanceolatis, tenuibus sed tamen firmis, anguste albomarginatis, mox tenuiter et saepe crispe filiferis, 5–10 mm. latis, 11.5–41 cm. longis; inflorescentia racemosa densiflora glabra, 0.5–1.1 m. longa, pedunculo brevi, haud vel raro folia superanti; floribus albis plus minusve purpureo-tinctis, globoso-campanulatis, segmentis perianthii latis acutis, sepalis 17–32 mm. latis, 34–58 mm. longis, petalis 24–37 mm. latis, 35–56 mm. longis; filamentis 15–28 mm. longis; pistillis 7–10 mm. diametro, 24–31 mm. longis, ovario pallide viridi lato tumidoque, suturas carpellorum prominentes et depressiones antherarum leves ferenti, stylo pallide viridi vel albescenti, gracili, 6–10 mm. longo; capsulis (immaturis) late oblongis, 27–35 mm. latis, 62–70 mm. longis, haud vel valde constrictis paulum supra medium, capsulis seminibusque maturis ignotis.

Plants forming, at length, a very dense, compact, mass of rosettes, ranging from 1–44 and averaging 10 rosettes per plant, with 0.75–1.47 rosettes per square foot of soil; caudex, from soil level to center of rosette, 0–1.2 m., mainly 0.4–0.7 m. high, 5–8 cm. in diameter, simple or with 2–4 short branches each terminating in 1–3 rosettes; leaves thin but firm, rigid, spreading, dagger-like, linear to oblanceolate, narrowly white-margined, from 5–10 mm. (averaging 8 mm.) wide and 11.5–41.0 cm. (averaging 23 cm.) long; racemes densely flowered, 0.5–1.1 m., but usually 0.7–0.8 m. long; peduncles short, rarely extending above the leaf rosette; flowers short and opening widely, or long, narrow, and remaining closed; sepals generally purple-tinged, 17–32 mm. (averaging 20 mm.) wide, and 34–58 mm. (averaging 43 mm.) long; petals white or slightly purple-tinged, 24–37 mm. (averaging 29 mm.) wide, and 35–56 mm. (averaging 42 mm.) long; pistils 7–10 mm. (averaging 8 mm.) in diameter, and 24–31 mm. (averaging 28 mm.) long; ovary light to dark green, thick, ending abruptly in the style; style white to pale green, gradually tapering into the stigma, 6–10 mm. (averaging 8 mm.) long; filaments generally abruptly bending outward at or near base of style, 15–28 mm.

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PLATE 10. *YUCCA NAVAJOA*. Type locality 4.9 miles northeast of Tolatchi, New Mexico, May 28, 1944.

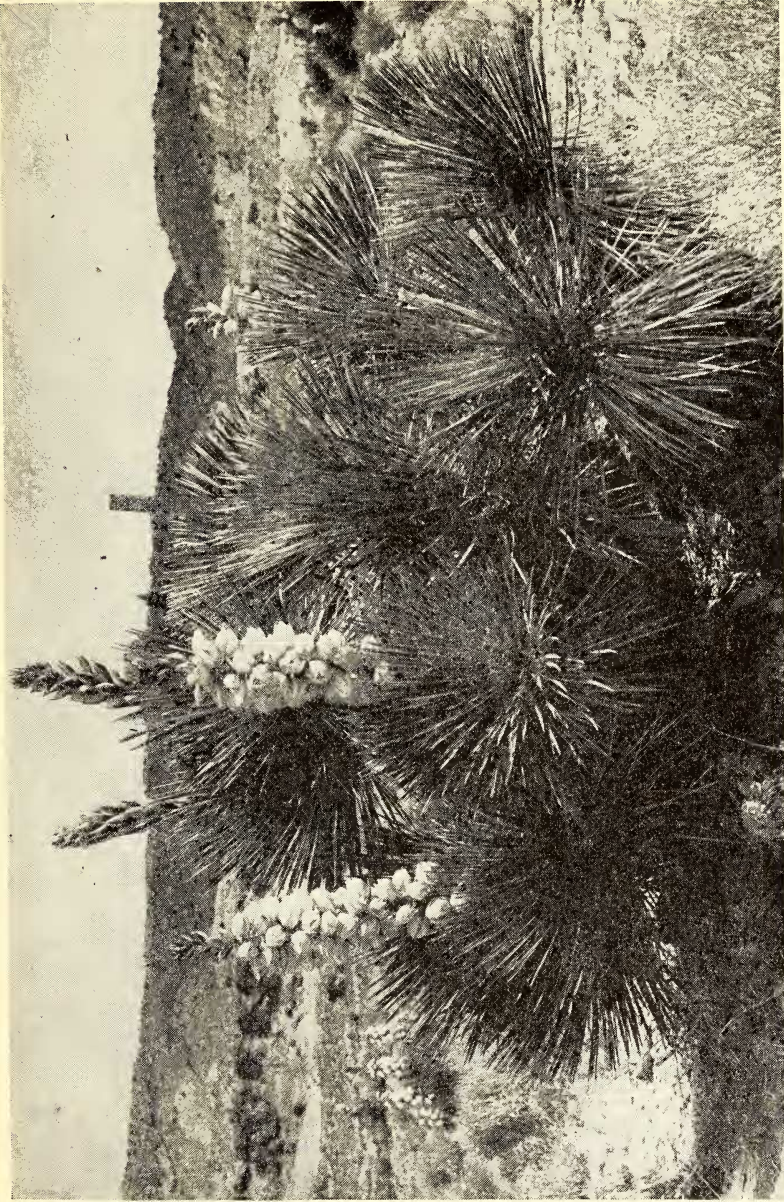


PLATE II. *YUCCA NAVAJOA*. Plant from which type specimen was collected, May 28, 1944.

(averaging 21 mm.) long; capsules (immature, 3 to 4 weeks old) broadly oblong, 27–35 mm. (averaging 32 mm.) wide, 62–70 mm. (averaging 67 mm.) long, and from deeply constricted to not constricted.

Type. West side of United States Highway 666, 4.9 miles northeast of Tohatchi, Eastern Navajo Indian Reservation, McKinley County, New Mexico, May 28, 1944, *Webber 300* (United States National Herbarium no. 1872608). At this location there is a mesa referred to by the writer as Yucca Point. This point extends north and west covering an area of from 0.75 to 1.00 square mile, is rather sandy and rocky, and has an elevation of between 6000 and 6500 feet. The luxuriant growth of *Yucca navajoa* growing at Yucca Point is shown in Plate 10. The plant from which the type specimen was collected is shown in Plate 11.

Topotype collections. From type plant, May 28, 1944, *301*; from different plants on Yucca Point, showing typical variations within the species, *302–306, 308*; typical leaf from each of fifteen plants, *307*; a young shoot, June 9, 1944, *299*; pod from type plant, *54*; preserved pistils and stamens from several plants, *8*. All collection numbers are those of the author.

Yucca navajoa belongs to the *Y. glauca* complex (*Yucca glauca* Nutt., *Y. Baileyi* Woot. and Standl., *Y. angustissima* Engelm. ex Trel., and *Y. constricta* Buckley), and is most closely related to *Y. Baileyi*. It, however, differs more from *Y. glauca* than any other species or form of the complex. *Y. navajoa* is unique in that it is the only species in the group with dense clumping mainly due to the branching of an aerial caudex. The formation of a caudex itself is rather unusual, as elongated aerial stems are rarely formed within the *Y. glauca* group, and all other species of the group have been described as acaulescent. A third distinction of the species is the characteristic small leaves, these being mainly linear, but often oblanceolate.

Aside from the preceding major distinctions, *Y. navajoa* differs from *Y. glauca* in that the inflorescence is strictly racemose and densely flowered, the peduncle is short and never extends above the leaves. It also differs from some of the various *Y. glauca* forms in flower color, pistil color and shape, and in the prominence of carpel sutures and of anther depressions on the ovary. *Y. navajoa* has many more leaf rosettes per plant than *Y. Baileyi* and slightly smaller flowers and flower parts. Additional distinctions of the species from *Y. angustissima* and *Y. constricta* are the comparatively large capsules and short peduncle of *Y. navajoa*.

About 20 miles north of Gallup, New Mexico, there is a group of yuccas, which approach *Y. navajoa*. In this vicinity, however, both *Y. Baileyi* and *Y. glauca* occur. Since the plants on this hill show characters of the latter two species as well as of *Y. navajoa*, it is the writer's belief that they represent a complex group of hybrids and hybrid derivatives.

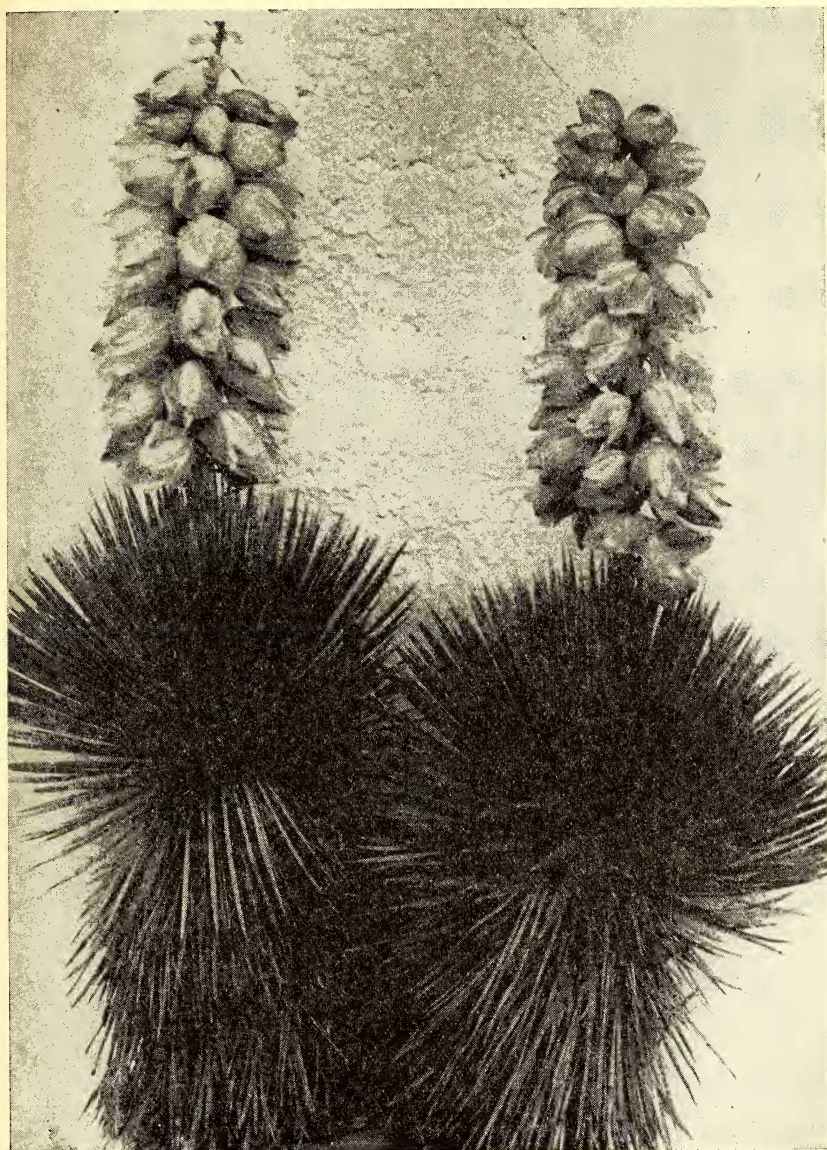


PLATE 12. *YUCCA NAVAJO*. Typical plant of species occurring in the vicinity of type locality, May 28, 1944.

Although *Yucca navajoa* is known only from the vicinity of the type locality, plants which approach it have been found as follows: east side of United States Highway 666, 20 miles north of Gallup, New Mexico (not collected); Little Colorado Gorge, Coconino County, Arizona, September 26, 1935, *Kearney* and *Peebles* (United States Cotton Field Station, Sacaton, Arizona, herbarium no. 12819). The Little Colorado Gorge specimen is similar to *Yucca navajoa* in many respects and may prove to be that species. In 1937 *Peebles* annotated this specimen as a variety of *Y. angustissima* but it was never published. It differs from comparable specimens of *Y. navajoa* only in that the leaf fibers are considerably coarser and more curled. Field notes do not state the number and density of the leaf rosettes—one of the major distinguishing characters of *Y. navajoa*. In 1939 *Miss McKelvey* annotated this specimen and listed several places where she had found "just such a plant"; she referred it to an unpublished variety of *Y. Baileyi*. She also referred to this unpublished entity a specimen collected at Keams Canyon, Arizona (Sacaton herbarium no. 9374). The writer has carefully studied the yuccas in the vicinity of Keams Canyon, as well as those in the other localities mentioned by *McKelvey*. In none of these localities have plants similar to the Little Colorado Gorge specimen, or to *Y. navajoa*, been found by the writer. More or less dwarf yuccas occur at the various localities, but none with trunks and oblanceolate leaves characteristic of either the Little Colorado Gorge collection of *Kearney* and *Peebles* or *Y. navajoa* has been found. In addition, no yuccas in the localities listed by *McKelvey* exhibit the major distinguishing growth characters of *Y. navajoa*. The writer has not visited Little Colorado Gorge, Arizona.

Field and experimental plot studies of all southwestern yuccas, as well as nanate forms of several species, strongly indicate that none of the distinguishing characters of *Y. navajoa* is induced by environment. The species, however, is now being subjected to further study in the wild and under cultivation.

The writer wishes to express grateful appreciation to his father, *Herbert John Webber*, University of California, for assistance given him during his yucca studies, and to *John Thomas Howell*, California Academy of Sciences, for translating the Latin description from English.

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